

TAX DIFFERENTIALS AND INDUSTRIAL LOCATION

Fernando Molini

Baltimore, May 1984

This study (\*) concludes that tax differentials may be an important locational factor, not only inside metropolitan areas, but also at other spatial scales. This finding is against what it is commonly believe among academics, and against what I expect at the onset of my research. This conclusion is reached after proving that tax differentials in many cases can increase or decrease profits more than any other cost differential, after criticizing the literature on the issue, and after refuting the main theoretical arguments against the effects of taxes on location. This result is particularly relevant for those businesses whose revenues do not depend on being in a specific location. In terms of number of establishments they may not be very important. But in terms of employment they may represent a large proportion of at least manufacturing and wholesale. And among manufacturing, the high technology firms may be one of the sectors more sensitive to tax differentials.

## I.-LITERATURE REVIEW:

### The Most Extended Opinion Among Scholars

The majority of scholars agree that tax differentials are a minor factor in the location of manufacturing. For example, H. L. Hunker said: "It is safe to say that taxes, as such, rarely play a significant role in the location decision, all the public 'noise' notwithstanding. There are remarkably few documented examples in which state or local taxes were compelling factors in either attracting an industry to a region or influencing its decision to leave (1)", and "almost every reliable source argues that taxes are not significant to industrial location decisions and the many surveys of such decisions support this contention. But, Seymour Harris points out that the problem 'lies in the stress that businessmen put upon taxes as a factor in determining

-----

(\*) This research has been developed thanks to a fellowship from the Johns Hopkins University Metropolitan Planning and Research Center. Additional funding was received from the Spanish Institute of Fiscal Studies. Help in the collection of data was provided by the Baltimore Regional Planning Council.

location'(2)"

Some authors are more radical, and not only deny the influence of taxes, but also said that "is perhaps the most tested of all locational hypotheses. And the results of prior testing do not encourage further test (3)"

### The Survey Approach

Surveys have probably been the most widespread method used to test the influence of taxes on location. A synthesis and evaluation of industrial location surveys was made by W. E. Morgan. He reviewed two dozen questionnaires and interview-location surveys covering firms that located in approximately three-fifths of the states. He concluded: "There is substantial agreement that nearness to markets, followed by labor, raw materials and transportation were the primary locational determinants....Almost invariably, taxes, along with financial inducements, were rated as an insignificant locational determinant (4)".

The above mentioned study should not give the impression that surveys always ranked taxes as an unimportant locational factor. Survey evidence in the role of taxes on location is inconclusive, with perhaps

-----

(1) Henry L. Hunker, Industrial development, Lexington, Mass., D.C. Heath and Co., 1974, p.136.

(2) Ibidem, op. cit. p.139.

(3) Leonard F. Wheat, Regional Growth and Industrial Location, lexington books, 1973, p.29

(4) William E. Morgan, Taxes and the Location of Industry, University of Colorado Press, Boulder, Colorado, 1967

a majority of cases in which taxes ranked relatively low, but with some surveys in which taxes rank relatively high. But whenever taxes rank high in a survey, the result is not generally taken seriously by academics on the grounds that there are "perverse incentives to overstate the importance of taxes in surveys read by state and local politicians (5)".

The same kind of argument is made against the declarations of businessmen. For example, Harvey E. Brazer cited the following statement made in 1957 by the President of General Motors Corporation: "the level of business taxation in Michigan already has led us to locate in other states where the taxes for General Motors job are less than one-half of the present taxes per job in Michigan. This will also be taken into consideration in the placement of additional facilities (6)". And after criticizing the design of a survey that reached the same conclusion, he said: "In general, then, we find a sharp cleavage between those who have attempted to study the influence of taxes on location and the frequently expressed views of businessmen. Among the reasons for the latter's views we may find the fact that state-local taxes are highly visible and, unlike power, labor, material and transportation costs, all of which generally bulk larger, they are regarded as being subject to control. No amount of rhetoric or invective is likely to influence other cost, but taxes are the product of legislative decision and are subject to

-----

(5) Council of State Planning Agencies, Theory and Practice in the Desing of Development Finance Innovations, Washington, D.C., 1978, p.30

(6) Harvey E. Brazer, "Taxation and Industrial Location in Michigan", in William Haber ed., The Michigan Economy, Its potentials and Its Problems, The W. E. Upjohn Institute for Employment Research, Kalamazoo, Michigan, 1959.

being influenced by pressure groups, including business (7)".

In any case it has to be said that whatever the results of the survey are, they are not very reliable. Some of the criticisms that can be made of that methodology are:

a) The samples include only those firms that did locate in the area under consideration. For example, if you made the survey on an area of high taxes, it is obvious that you can expect that no business will answer that taxes has been an important locational factor, because in that case it would never have located there in the first place.

b) Most of the times surveys fail to make the distinction between the locational problems of selecting a region and selecting a plant site. It has been pointed out that factors taken into account in selecting a general region are substantially different from those considered in site selection.

c) The surveys' results are based on ordinal rankings of loosely defined factors. The use of that scale of measurement implies that the magnitude of the effect of each variable on location is determined only in a very general way.

d) The samples are not usually representative of the populations. This is because the sample selection is not usually done in a scientific way and the proportions of non-respondents is usually very high.

-----

(7) Ibid. p. 324

e) In many cases they try to measure the effect of taxes on the very heterogeneous population of business, without weighting for the relative importance of each industry category in both number of establishments and number of employees, without reporting separately for each business category (i.e. retail or manufacturing, food processing or consumer goods, etc) and without differentiating between relevant characteristics of the firm (i.e. large or small, capital or labor intensive, public or private ownership, etc).

f) They usually give the result by number of establishments that have cited a locational factor as important, without specifying the number of employees that those establishments represent. For example, in the survey by Muller and Morgan (8), large firms cited fiscal inducement as the main reason for their choices, but because they represent a very small proportion of total establishments, the researchers conclude that taxes are an unimportant locational factor.

But, as C. Armington has pointed out, criticizing the sentimental image of American capitalism of communities in which most people are employed in small independent business, "It is true that three-quarters of the business establishments in the country are independent businesses with a single location. Furthermore, 87% of all business establishments are small (belonging to firms with fewer than 100 employees). However, it is apparent from table 3

---

(8) E. Muller and J. N. Morgan, "Locational Decisions of Manufacturers", American Economic Review, 1962, pp.204-217.

that in 1976 the majority of United States private sector employment is in large multi-establishment firms (9)". The mentioned table gives the following percentage of employment by firm size and complexity: 28.7% small (less than 100 employees) single location firms; 7% small multi-establishment firms; 11.1% large (over 100 employees) single location firms; 53.2% large multi-establishment firms.

g) For large firms and old firms it is difficult, if not impossible, to interview persons that were involved in all the steps of the decision making process of locational selection. The persons completing the questionnaire may give the highest ranking to factors that they believe should be important rather than the factors that actually motivated the location decision.

h) Firms may use surveys to lobby for lower tax rates or tax exemptions.

#### The Statistical and Data Analysis Approach

There have also been empirical studies that try to analyze the behavior of businesses by what they actually do instead of what they say they do. As in the case of surveys, the results of those studies can also be taken, in the best of cases, only as suggestive. Some of the criticisms that can be made are:

-----

(9) Catherine Armington, "Further Examinations of Sources of Recent Employment Growth. Analysis of USSEM Data for 1976 to 1980", Business Microdata Project, The Brookings Institution, March 1983.

a) The definition of each variable is often made very loosely, and it does not measure what it is supposed to. This limitation is well known by many scholars. For example, C. Armington, C. Harris and M. Odle said referring to their work: "The variables used for the socioeconomic characteristics of the metropolitan areas are often averages for broad classes. For example, the tax index is calculated from a composite of all state and local taxes per capita. It is not a precise measure of the actual tax burden faced by a new business and does not explicitly take into consideration any special benefits offered by local governments to induce businesses to locate there. The wage variable is also an average for all manufacturing production workers, which may not accurately reflect inter-metropolitan differences for high technology industries. As more detailed data becomes available, further research may clarify many of these ambiguities (10)".

b) There is a lack of reliable data for many variables. At this point there is no complete and elaborated data base for measuring the behavior of business, although some steps are being taken in the U.S. to fill that void with the development of the United States Establishment and Enterprise Microdata (11). The problems with the use of the Dunn's and Bradstreet Markets Identifiers, which is probably the most widely used data base until now, have

-----

(10) C. Armington, C. Harris and M. Odle, "Formation and Growth in High Technology Business: A Regional Assessment", Business Microdata Project, Washington, D.C., The Brookings Institution, 1983.

(11) Candee S. Harris, "United States Establishment and Enterprise Microdata", the Brookings Institution, April 1983



been explain by Struyk (12). An excellent review of the majority of data bases available has been done by R. E. Berney (13).

c) The design of the studies are often done in a non-scientific way, with many internal and external inconsistencies. That criticism should be done research by research, and that task is out of the scope of this work. An analysis of all the econometric models can be found in Wasylenko (14), which is the latest literature review that I am aware of (15). A detailed criticism of the "Interstate Tax Competition" study of ACIR (16), which is the most recent and comprehensive analysis of locational data, can be found in Moliní (17).

d) The use of statistical methods, which is the most accurate way of measuring the relevance of a locational factor, does not really prove anything. If the test is well done and has not been

-----

(12) Raymond J. Struyk, Intrametropolitan Industrial Location, D. C. Heath and Company, 1975, pp. 151-157

(13) Robert E. Berney, "Developing a Microdata Base to Support Research on Small Business Issues", Review of Public Data Use, 1982, pp. 167-178.

(14) Michael Wasylenko, "The Location of Firms, The Role of Taxes and Fiscal Incentives", in Roy Bahl Ed., Urban Government Finance, Emerging Trends, Sage Publications, Beverly Hills, London, 1981,

(15) For earlier literature reviews see: John F. Due, "Studies of State-Local Tax Influences on Location of Industry", National Tax Journal, 1961, pp. 163-173, and Joe S. Floyd, Effects of Taxation on Industrial Location, Chapel Hill, North Carolina, University of North Carolina Press, 1952.

(16) ACIR, Interstate Tax Competition, Washington, D.C., Government Printing Office, 1981,

(17) Fernando Moliní, Ensayos de un Geografo sobre el Federalismo Fiscal de Los EE.UU., Fundación Juan March, Madrid, 1984.

manipulated to obtain the desired result, in the best of cases, it will suggest that something happened and it will yield the level of probability that the result is not due to chance. One of the problems with the reward system of academic work is that in most of the cases, in order to be published, the results should be statistically significant and not empirically different from what it is commonly believed, unless you can really prove the accuracy of your results. This gives an incentive to use alternative ways of measuring the same variables and alternative statistical methods until the expected results are obtained.

The imperfections of the empirical studies are recognized by many scholars, although I have never seen a comprehensive compilation of defects. This may give the impression that they are not important enough as to question the results of the studies. For example, Miller E. Willard said: "Although many studies have been made of the effects of taxes on the location of industry, they have rarely been sufficiently sophisticated in their techniques to be of great value... Most studies of the influence of taxes on industrial location have a number of weaknesses. For example, they do not answer a basic question: If the tax structure had been different, would manufactural growth have been at an even higher level? They also ignore the influence of different types of taxes. Nevertheless, they do reveal that higher taxes have not had a measurable effect on the growth of manufacturing in a particular locality (18)". As a more recent example, Roger W. Schmenner said:

-----

(18) E. Willard Miller, Manufacturing: A Study of Industrial Location,

"Statistical tests of the effects of taxes have never been as precise as both proponents and critics would like. While I cannot pretend that my own data about tax and financial effects on industrial development are thoroughly persuasive and definitive, they do add weight to the general view that taxation and financing schemes developed by government entities have only a minimal effect on the selection of new plant locations (19)".

### The Special Case of Intrametropolitan Location

In spite of the general opinion among academics of the lack of influence of taxes, many scholars have expressed some doubts of intrametropolitan location. For example, ACIR said : "The Commission recognizes that, within a region -and particularly between states in the same metropolitan area- interstate tax differentials can become the 'swing' factor in industrial location decisions (20)"

The empirical studies of Wasylenko (21) and Fox (22) seems to corroborate the statement of ACIR for intrametropolitan firm relocation. Wasylenko found that, after omitting jurisdictions appearing to zone out

-----

University Park, Pennsylvania, Pennsylvania State University Press, 1977, pp. 127-128.

(19) Roger W. Schmenner, Making Business Location Decisions, Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1982, p.45

(20) ACIR, op. cit., p.4

(21) M. J. Wasylenko, "Evidence of fiscal differentials and intrametropolitan firm relocation", Land Economics, 1980, pp. 339-349

(22) W. Fox, "Fiscal differentials and industrial location: some empirical evidence", cited by Wasylenko, op. cit., p. 339

industrial or commercial firms, the result of his econometric analysis indicated that fiscal variables were statistically significant determinants for location of manufacturing and wholesale trade. But Wasylenko's results indicated that tax variables were less important predictors of establishment location than labor supply and agglomeration economies that were also significant for the above mentioned industries plus construction, retail, finance and service firms. He concluded that manufacturing and wholesale trade were more sensitive to taxes because they are more concerned with cost, while the other industries may follow consumer markets and place less emphasis on fiscal characteristics.

One more time, his methodology of analysis should be questioned. His evidence on the influence of taxes on manufacturing and wholesale is suggestive, but not conclusive. This, plus the weight of the opinion of most of the scholars, may be what made Wasylenko to be very careful in his conclusions about the influence of taxes on location. In his above mentioned literature review, Wasylenko concluded: "Taxes and fiscal incentives play little or no role in a firm's choice of location among regions...The intraregional evidence on the effect of taxes is less definitive. When firm locational models take account of a community's supply of industrial sites, taxes are a statistically significant determinant of industrial locations. Still, taxes are secondarily important for locational decisions (23)".

---

(23) Wasylenko, "The Location of Firms, the Role of Taxes and Fiscal Incentives", op. cit., p. 186

Criticism of the Effectiveness of the Enterprise Zone Policies

The belief that taxes are not very influential on business location has been taken in consideration in the design of some public policies. For example, it explains in part why fiscal incentives are accompanied in the Enterprise Zone policies by other incentives, especially in the original proposals. In Great Britain the fiscal incentives consist in the exemption from development land tax and local rates and the possibility to write off 100% of capital expenditures for tax purposes. But the Enterprise Zone also waives the need to obtain planning permission from the local authority, building regulations are streamlined, and accountability reports are reduced (24). The deregulation incentives are also being included in the different proposal discussed in the U.S. at the federal level as well as in the Enterprise Zone policies discussed (and many of them already approved) in several states.

Also, the opinion that taxes are not very influential on business location is used as one of the main arguments against the potential effectiveness of such policies. For example, Robert Mier and Scott E. Gelzer said: " the advantages of comprehensive state tax relief are somewhat elusive. State tax liability constitutes only a small fraction of an individual company's operating cost, and has repeatedly been shown to be a minor factor in influencing location and expansion decisions (25)"

-----

(24) Robert A. Beauregard and Briavel Holcomb, "Enterprise Zones: the Non-Manipulation of Economic Space", Urban Geography, pp. 223-243.

(25) Robert E. Mier and Scott E. Gelzer, "State Enterprise Zones: The

## II.-REFUTING THE THEORETICAL ARGUMENTS AGAINST THE EFFECTS OF TAX DIFFERENTIALS

Probably the theoretical arguments against the effects of taxes on location have been more influential in the general perception of the issue among scholars than the empirical studies discussed above. I even have the impression that the design and interpretation of results of many studies have been biased for the theoretical reasons that were believed to explain the little effects of taxes on location.

This chapter is dedicated to demonstrate that in many cases those theoretical arguments are wrong.

### 1.- Taxes as a Payment in Lieu of Services:

What may be more important for business is the quality of services provided relative to tax burden. From this statement it has very often been considered that higher taxes and tax rates do not necessarily detract from an industry's evaluation of a size because they may be associated with more public services. Lower taxes can mean lower availability and quality of public services, while higher taxes can mean greater availability and quality of services. If this is true, tax variations cannot be considered an added cost to the firm.

This argument has been enough to not consider taxes in many analysis of industrial location. However, this association of higher taxes with higher quality of services is not often found in reality and can not be taken seriously. This is for three reasons:

a) The main source of revenues for any government level is not likely to come from taxes levied on business. Therefore, it may be frequent to find states and/or local governments with comparatively low taxes on business, but with higher taxes as measured in a more general way, such as taxes per capita.

This is the case in my analysis for the Baltimore-Washington area between 1974-1979. In terms of tax effort (26), "Fiscal blood pressure" (27), and per capita tax revenue, Maryland did have higher tax pressure than Virginia. However, when tax burden was measured in terms of taxes on several hypothetical manufacturings, for the majority of them (and particularly for the capital intensive firms), the Maryland jurisdictions did have lower tax burden on manufacturing than the Virginia jurisdictions. The lower tax burden on manufacturing for most cases in Maryland was explained, in part, by the exemption of manufacturing equipment from the personal property tax. The research shows that most of the jurisdictions of the state with the lower taxes on manufacturing did have more revenues, which will provide them with higher quality of services.

-----

(26) As defined in ACIR, Tax Capacity of the Fifty States: Methodology and Estimates, Government Printing Office, Washington, D.C., 1982, and in ACIR, 1981 Tax Capacity of the Fifty States, Government Printing Office, Washington, D.C., 1983.

(27) Ibid.

b) The level of revenues does not depend on the tax rates alone, but also on the economic base on which those rates are applied and on who bears the tax burden.

The ACIR reports on tax capacity mentioned above are very illustrative about this issue. For example, according to the report, Alaska in 1981 has the highest state tax effort, 84% above the the national average. But, Alaska's tax effort is largely attributable to its exceptionally high severance tax collections, and does not indicate that its residents and businesses are generally subject to heavy tax burdens. Indeed, its non-severance tax effort is 38% below of the national average.

ACIR also pointed out that many western states have raised average or above average revenues with low tax effort. And, on the other hand, the revenues of many other states, such as those in the Northeast, might have revenues remaining in line with the national average, even if they have rising tax efforts, simply because their capacities have declined in the meantime.

c) As Richard B. Mackenzie has pointed out, "a growing volume of literature in public choice economics reveals a tendency towards diseconomies of scale in government at all levels: with growth in tax collections, the quantity and quality of public services do not rise proportionately (28)".

-----  
(28) Richard B. MacKenzie, Restrictions on Business Mobility, American Enterprise Institute for Public Policy Research, Washington, D.C., 1979, p.48



Those three arguments are enough to conclude that at least in many cases it is not a valid assumption that higher taxes correspond with higher quality of services and vice versa.

## 2.- The Mitigating Influence of the Federal Deductibility

It has been argued that any given state and local tax differential in the U.S. will be reduced by approximately 50% due to the deductibility of state and local taxes for federal income tax purposes. This argument has been expressed by ACIR in the following way: "Federal and state income tax provisions that permit business to write-off state and local taxes diminish the importance of any tax liability differences. One of the least publicized effects of current federal policy is the mitigating influence of the federal income tax on the inevitable differences in state and local tax rates. In income tax states, states' tax provisions perform a similar but quantitatively smaller role with respect to local tax differences (29)."

The above argument is only partially true. It is true only in relation to the absolute aspect of tax differentials, but not to what I have called the proportional aspect of tax differentials, that is, the relationship of tax differentials to profits after taxes. For example, it is true that if a business paid in location A \$100,000 more than in B before federal income tax, it will pay only around \$50,000 more in A than in B after federal income tax. However, in proportion to profits after the federal income tax, the tax differential is unchanged. Let me

-----

(29) ACIR, Interstate Tax Competition, op. cit., p.6

prove that statement.

Suppose that we have a firm located in Jurisdiction A, which has relatively high state and local taxes. In this location, the corporation pays 6% of its profits in state and local taxes. In jurisdiction B, that is relatively low in local taxes, the corporation will pay 2% of its profits in state and local taxes.

The profits that the corporation will have in A after having paid state and local taxes are:  $\pi - 0.06\pi = 0.94\pi$ , where  $\pi$  represents profits in A and B before any tax (it is assumed that the revenues and all costs except taxes are equal in A and B). If the corporation were located in B, profits after state and local taxes would be:  $\pi - 0.02\pi = 0.98\pi$ . The tax differential is  $0.98\pi - 0.94\pi = 0.04\pi$ . If the business moves to B it will increase its benefits after state and local taxes by  $0.04\pi$ , that is, an increase by 4.26% in relation to profits in A after state and local taxes ( $0.94\pi$ ).

If we assume a flat federal income tax of 45%, we get: In A  $0.94\pi - 0.423\pi = 0.517\pi$  and in B  $0.98\pi - 0.441\pi = 0.539\pi$ . The tax differential will be of  $0.022\pi$ , about half that before the federal income tax. But in relation to the remaining profits in A after all taxes ( $0.517\pi$ ), the tax differential is exactly the same as before, 4.26%.

Of course, if the federal deductibility did not exist, the tax differential in relation to profits would have been even higher. In this last sense, it is possible to speak about the mitigating influence of the federal deductibility. But that mitigating influence does not

diminish the importance, in relation to profits, of any tax liability difference.

### 3.- Taxes can be Shifted

Since we have been discussing tax differentials, it can be assumed that for firms selling similar products in the same markets, one can state that it would not be competitive for the firm in the higher tax jurisdiction to shift its tax load differential via price change. D. M. Soule argues about that as follows: "A differential in total tax load is of the nature of a partial tax (i.e., a tax applicable at different rates or only to part of the firms selling in a market). In incidence analysis, the effect of a partial tax is to cause long run migration of productive resources to other (lower tax) areas. This long run migration of productive resources caused by tax differentials between states constitutes the basis for the contention that interstate tax differentials may affect industrial location. Measurement of these tax differentials requires that tax loads be computed in terms of total dollars of taxes paid to government, without distinguishing the types of taxes composing the total tax load, and with adjustment only for obvious cases of shifting (30)".

To be able to shift the tax differential via price change due to local monopoly, does not mean the differences in tax burden will not influence business location. That will only happen, if we assume profit

-----

(30) Don M. Soule Comparative Total Tax Loads of Selected Manufacturing Corporations, Lexington, Kentucky, University of Kentucky, 1960, pp. 26-27.

maximization firms, in cases where the business can only shift the taxes in only one of the alternative locations. If the business can shift the taxes in both places, it will prefer, other things being equal, the lower tax jurisdiction, since all the taxes that the business is shifting are in fact potential profits that the business could make if there were no taxes.

It can be argued that the firms more likely to be affected by tax differentials are firms in a competitive market. And larger the market, the less likely that taxes could be shifted via price changes.

It must be admitted that some shifting of cost might occur by means other than price changes, e.g. lower wages paid to workers. But for firms close enough, selling similiar products in the same market, comparative lower wages may cause the workers to be less efficient at work. Furthermore, states with high taxes are where unions tend to be stronger and where wages are higher. Therefore, it is difficult to shift taxes to the workers.

#### 4.- Tax Differentials Constitute Only a Small Fraction of a Company's Operating Cost

The first error in that statement is to relate tax differentials to cost instead of to profits, a mistake very often made. Many empirical studies have shown that if we relate tax differential to profits the increase or decrease in profits due to tax differentials can become very significant. In my study on the Baltimore-Washington Area an extreme

case of a hypothetical corporation based on a real corporation shows an increase in profits of nearly 30% due to tax differentials if it locates in Anne Arundel County, Maryland (the lowest tax jurisdiction for that firm) instead of in Washington, D.C. (the highest tax jurisdiction). For most of the hypothetical corporations the average was of around 10% increase in profits. A review of other studies shows a large size of geographical tax differentials relative to business profits which can be found in Kenneth A. Small (31) and Wasylenko (32). Most of those works use the typical manufacturing methodology. However, research using aggregate data on taxes and business have also shown that state and local taxes have become significant in relation to a business income, and show a very wide variation across states. William C. Wheaton in one of such studies draws the following conclusions: "First, business taxes constitute a larger share of net business income than previously thought, around 8 percent. Second, and perhaps more importantly, this share exhibits sizable variations across states, ranging from 3 to 12 percent. Finally, there is a very distinct regional pattern to the taxation of businesses. The South and the Farm Belt have very low taxation, followed by the Mountain States. The Mid-West has average tax levels, while the West Coast is above average. The Northeast has the highest effective tax levels on business (33)".

-----

(31) Kenneth A. Small, Geographically Differentiated Taxes and the Location of Firms, Princeton, New Jersey, Princeton Urban and Regional Research Center, 1982

(32) Michael Wasylenko, "The Location of Firms, The Role of Taxes and Fiscal Incentives", in Roy Bahl Ed., op. cit.

(33) William C. Wheaton, "Interstate Differences in the Level of Business Taxation", National Tax Journal, 1983, p. 84.

The fact that tax differentials are in many cases significant in relation to profits has been reconciliated with the general view on the grounds that other cost differentials are even greater and for the other three theoretical considerations refuted in this chapter.

Against the argument that other cost differentials are greater K. A. Small stated: "This argument ignores the fact that it is the marginal effect of taxes, all other factors held constant, that matters. Any firm for which location is an issue at all must face two or more possible sites with advantages and disadvantages that hover in a close balance; otherwise the firm's executives would not waste their time worrying about locational choice. In such cases, tax or other financial inducements would substantially affect the comparison of expected profit levels at alternative locations. The question then becomes: How many firms are there for which a given municipality is one of several closely competing locations? Most state and municipal governments apparently believe the answer is: Many (34)".

Here I will attempt to develop a method that will help to measure the relative importance of two or more cost differentials. The method consists in comparing the increase in profits of a typical business, if it moves or locates in places with different costs. Because I will be using as a definition of the hypothetical corporation proportions between profits, revenues and cost, the results are applicable to businesses that fit more or less the proportions, whether it is a small or large business.

-----

(34) K. A. Small, op. cit., p.7.

a) increase in profits of a business in a high wages and high taxes jurisdiction (A) that moves to a low wages jurisdiction (B)

The assumptions made in the examples are:

-State and local taxes before income tax are 2% of profits before any tax in A.

-Before tax profits are 24% of total revenue, which gives us a reasonable rate of return of invested capital after all taxes of around 12%, with variations depending on state and local tax differentials. Therefore, state and local taxes are 0.63% of all other costs.

-Labor costs represent 25% of total costs, therefore 19% of revenue or 79.17% of before tax profits. In the examples, I will use a high proportion of labor to profits in comparison to the proportion of local taxes other than income to profits. This is to avoid the criticism that the results on the impact of taxes differentials has been obtained because of an excessive tax share of profits.

-State income tax rate is 10% and there is a flat federal income tax of 45%.

Profits in A are:

$$\pi_1 = \pi - 0.02\pi = 0.98\pi;$$

$$\pi_2 = 0.98\pi - 0.098\pi = 0.882\pi;$$

$$\pi_3 = 0.882\pi - 0.3969\pi = 0.4851\pi.$$

Where  $\pi$ =profits before any tax;  $\pi_1$ =profits after state and local taxes other than income;  $\pi_2$ =profits after state income tax;  $\pi_3$ =profits after federal income tax.

After the move to a jurisdiction with a 20% lower labor cost the profits, all other things being equal, will be:

$$\pi_1 = 0.98\pi + 0.15834\pi = 1.13834\pi;$$

$$\pi_2 = 1.024506\pi;$$

$$\pi_3 = 0.5634783\pi$$

The increase in profits after the move will be  $0.0783783\pi$ . In relation to the profits before the move, the labor cost differential represents a 16.157% increase.

Labor costs have been taken as an example. Obviously, any other factor could have been used instead of labor, and the results would have remained unchanged as long as the proportions were maintained.

Another way of interpreting each example is a reduction of all costs other than taxes between alternative locations. This is taking into account the increase and decrease in cost. For example, the results of the above case can be interpreted as a increase in profits in a location where the balance between savings in cost and extra cost result in a 5% reduction in total cost.

b) Increase in profits of a business in a high wages and high tax jurisdiction (A) that moves to a low tax jurisdiction (C)

Assume that our business in jurisdiction A moves to a jurisdiction with half the local taxes of A and no income tax (35).

---

(35) There are four States without income tax: Nevada, Texas, Washington and Wyoming, and South Dakota has a very small state income tax.



The increase in profits would be  $0.05445\pi$ , or a 12.2448% increase in profits. This is a very significant increase, even if it is lower than the one due to labor cost differentials.

c) Increase in profits of a business in a high wage and tax jurisdiction (A) that moves to a low tax and relatively low wage jurisdiction (D):

Assume that our business in jurisdiction A moves to a jurisdiction with a 10% lower labor cost, half the local taxes of A and no income tax. All other things being equal, the profits in D will be:

$$\pi_1 = 0.99\pi + 0.07917\pi = 1.06917\pi;$$

$$\pi_3 = 0.58804\pi.$$

The increase in profits after the move is  $0.1029435\pi$ , a increase of 21.22%.

In this example, the lower labor cost in C than in D is not enough to offset lower taxes of D.

d) Increase in profits of a business in a high wage and high tax jurisdiction (A) that moves to a very low wage jurisdiction:

Assume that our business moves to Hong Kong, where labor cost is approximately 80% cheaper (36). Assuming all other things are equal

-----

(36) Richard Peet provided the data that in 1978 the hourly earnings in manufacturing were of \$0.78 in Hong Kong and of \$6.17 in the U.S. in his

(37), the increase in profits will be:

$$\pi_1 = 0.98\pi + 0.63336\pi = 1.61336\pi;$$

$$\pi_2 = 1.452024\pi;$$

$$\pi_3 = 0.7986132\pi.$$

The increase in profits is of 64.62%

e) Increase in profits of a business in a high wage and high tax jurisdiction that moves to a very low tax jurisdiction:

Assume that our business in A moves to a jurisdiction that has, using again the Hong Kong example, a single 15% income tax.  $\pi_3$  will be  $0.85\pi$ . The increase in profits will be 75.22%. This increase in profits is due to tax differentials which indicates that, against what it is commonly believed (38), it may be that the major saving in moving to Hong Kong will probably be its lower taxes and not its lower labor cost.

-----

article "relations of production and the relocation of United States Manufacturing Industry since 1960", Economic Geography, Worcester, Massachussets, 1983. These figures should be taken into account only as indicative, since they may also reflect differences in the industrial mix.

(37) In Hong Kong, it should be noted that the transportation cost will increase dramatically, as well as the cost of land.

(38) see for example M. Storper and R. Walker, The Spatial Division of Labor and the Location of Industries, in L. Sawers and W. K. Tabb, Sunbelt Snowbelt: Urban Development and Regional Restructuring, New York, Oxford University Press, 1984

The above examples have been elaborated in order to demonstrate how taxes can be important as a cost savings, especially at an international level. However, it should be noted that if we measure only one factor, we are not capable of measuring the real effect of that factor. To show the real impact that taxes can have it is necessary to calculate the increase in profits in combination with any other cost saving. For example, if we consider in the Hong Kong case the full effect of very low taxes and low labor cost, the increase in profits will be of 291.27%, an increase much more significant than the one due to any of the factors alone.

### III.-CONCLUSIONS:

This study concludes that tax differentials may be an important locational factor, not only in intrametropolitan location, but also at other spatial scales. This conclusion is reached because tax differentials in many cases can increase or decrease profits more than any other cost differential. This result is particularly relevant for those business whose revenues do not depend on being in a specific location. In terms of number of establishments they may not be very important. But in terms of employment, they may represent a large proportion of manufacturing and wholesale. And among manufacturing, the high technology firms may be one of the sectors more sensitive to tax differentials. If this is true, the relevance of the influence of taxes on manufacturing location will be very important, since it is a key sector of the economy in the sense that technical change and industrial innovation are essential to the productivity and growth of the national economy, and because according to the Joint Economic Committee on high technology, "About 75% of the net increase in manufacturing jobs from 1955 to 1979 is attributable to expansion in the emerging high technology industries (39)".

The above conclusion does not imply that a jurisdiction with high taxes should reduce its tax burden. That depends on each individual case. It has to be noted that low taxes, taken by themselves, are not a guarantee of economic prosperity. It is also necessary to have the

-----

(39) U.S. Congress, Joint Economic Committee, Location of High Technology Firms and Regional Economic Development, U.S. Government Printing Office, Washington, D.C., 1982, p.36

"necessary conditions" before the tax incentives can work. Some of the conditions are common to most businesses, such as infrastructure or a minimum level of business. Others are specific for some kind of businesses as, for example, proximity to high quality academic centers for high-tech industries.

But because tax differentials are an important proportion of profits, it can not be said any more that "taxes and financial inducements seem to be, at best, tie-breakers acting between otherwise equal towns or cities (40)" In many cases, relatively lower taxes may compensate for some other cost such as labor or transportation which are relatively higher. For this reason, fiscal inducements may be effective in their goal of retaining, attracting or encouraging the formation of businesses. But because many firms may be more sensitive to markets, to any other cost differentials, or to any other factor that influence location, any fiscal inducement policies should be very restrictive in the sense that they should only help businesses who otherwise would not locate there. If this is not the case, the increase in revenues brought into a jurisdiction by the plants that could have located there or moved elsewhere may not exceed the revenue foregone from plants that would have located there in any case.

---

(40) Roger W. Schmenner, Making Business Location Decisions, Englewood Cliffs, New Jersey, Prentice-Hall, Inc, 1982, p. 51

\*\*\* \*\*

## Social Accounting Matrix

---

Case	Profitable?	Socially	
		cheaper open	Productively
		Than closed?	linked?
<hr/>			
1	No	No	No
2	No	Yes	Either
3	No	Either	Yes
4	Yes	Yes	Either
5	Yes	No	No

---

\*\*\*